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EXAMINER	
KENNEDY, JENNIFER M	
ART UNIT	**PAPER NUMBER**
2812	

DATE MAILED: 07/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/679,144	AGGARWAL ET AL.	
	Examiner	Art Unit	
	Jennifer M. Kennedy	2812	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 May 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *74-76 and 80-97* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *74-76, 80-97* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 74-76, 80-85, 87-91, 93-95, and 97 are rejected under 35 U.S.C. 102(e) as being anticipated by Basceri et al. (U.S. Patent No. 6,444,478).

In re claims 74 and 75, Basceri et al. discloses the PZT film prepared in accordance with the method comprising: forming a front-end structure over a semiconductor substrate (30, see explanation of substrate assembly, column 5, lines 32-45); forming a bottom electrode (32) over said front-end structure; preheating said semiconductor wafer (see column 7, lines 10 through column 8, lines 55); and forming a PZT film (see column 6, line 44 through column 7, line 5) over said bottom electrode; wherein said preheating step comprises placing said semiconductor wafer on a heater, and heating said semiconductor wafer in an ambient comprised of a mixture of an inert gas and an oxidizer gas (see column 8, lines 43-55 and column 9, lines 25-47, Pb being applied to example with Ti).

In re claim 76, Basceri et al. further discloses wherein the preheating step can be performed in a vacuum (see column 9, lines 15-25).

In re claims 80-82, and 87-89, Basceri et al. discloses the PZT film formed wherein said preheating step comprises heating said semiconductor wafer in an ambient comprised of a mixture of an inert gas of any one of He, Ar or N_2, and an oxidizer gas of any one of O_2, N_2O, and O_3 (see column 8, lines 43-55 and column 9, lines 25-47, Pb being applied to example with Ti).

In re claims 83-85, 90-91, 93-95, and 97, Basceri et al. also discloses wherein Ar comprises at least 20% (500 sccm) of the flow of inert/oxidizer gas mixture (where the oxidizer gas can be supplied anywhere from 1 to 5000 sccm), wherein the PZT film contains at least 2% excess Pb from the stoichiometric composition, wherein the PZT film is $PbZrO_3$, wherein the PZT film is $PbTiO_3$, wherein the PZT film is a solid solution of the component end members $PbZrO_3$, and $PbTiO_3$ (see column 6, line 44 through column 7, line 5, Pb being applied to example with Ti).

While Basceri et al. does not specifically state the PZT film is $PbZrO_3$, the examiner notes that a PZT film must contain some titanium and some zirconium in order to be a PZT film (lead zirconium titanate) therefore, the examiner takes Gilbert et al. disclosure of a $Pb(Zr, Ti)O_3$ (see column 1, line 1-5) film to read on the limitation of the PZT film being $PbZrO_3$ or $PbTiO_3$.

The examiner notes claims 74-76 and 80-97 are product-by-process claims. Product-by-process claims are not limited to the manipulations of the recited steps, only the structure implied by the steps. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product

itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Claims 74-75, 80-82, 84-85, 87-91, and 93 are rejected under 35 U.S.C. 102(e) as being anticipated by Gilbert et al. (U.S. Patent No. 6,730,354).

Gilbert et al. discloses the PZT film prepared in accordance with the method comprising: forming a front-end structure over a semiconductor substrate (22), forming a bottom electrode over said front-end structure (see column 4, line 62 through column 5, line 5); preheating said semiconductor wafer containing said electronic device (bottom electrode), wherein said preheating step comprises placing said semiconductor wafer on a heater, and heating said semiconductor wafer in an ambient comprised of a mixture of an inert gas of any one of He, Ar or N_2, and an oxidizer gas of any one of O_2, N_2O, and O_3, (see column 6, line 54 through column 7, line 13, and column 3, lines 13-55); and forming a PZT film (see column 7, lines 14-31 and column 2, lines 54-60) over said bottom electrode.

In re claims 84 and 90, Gilbert et al. disclose the device wherein the PZT film contains at least 2% excess Pb from the stoichiometric composition of $Pb_{1.0}(Zr,Ti)_{1.0}O_3$ (see column 7, line 13 to column 8, line 6 and specifically Figure 5, wherein the preferred gas ratio Pb/ Zr +Ti of 1.00 to 1.07 shows a film containing a Pb/Zr +Ti ratio of approximately 1.1)

In re claims 85, 91, and 93, Gilbert et al. disclose the device wherein said stoichiometric PZT film is $PbZrO_3$, wherein said stoichiometric PZT film is $PbTiO_3$, wherein said stoichiometric PZT film is a solid solution of the component end members $PbZrO_3$ and $PbTiO_3$.

While Gilbert et al. does not specifically state the PZT film is either $PbZrO_3$ or $PbTiO_3$, the examiner notes that a PZT film must contain some titanium and some zirconium in order to be a PZT film (lead zirconium titanate) therefore, the examiner takes Gilbert et al. disclosure of a $Pb(Zr, Ti)O_3$ (see column 1, line 1-5) film to read on the limitation of the PZT film being $PbZrO_3$ or $PbTiO_3$.

The examiner notes that Merriam-Webster's Collegiate Dictionary, Tenth Edition defines solution as an act or the process by which a solid, liquid or gaseous substance is homogenously mixed with a liquid or sometimes a gas or solid, or a homogenous mixture formed by this process. The examiner notes that $Pb(Zr, Ti)\ O_3$ is a solid solution of the component end members $PbZrO_3$ and $PbTiO_3$.

The examiner notes claims 74-76 and 80-97 are product-by-process claims. Product-by-process claims are not limited to the manipulations of the recited steps, only the structure implied by the steps. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a

different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 86, 92, and 96 are rejected under 35 U.S.C. 103(a) as being unpatentable over Basceri et al. (U.S. Patent No. 6,444,478).

Basceri et al. discloses the device substantially as claimed and rejected above, including having a La doped PZT film, but does not disclose the method wherein wherein the PZT film is doped up to 5%.

The examiner notes that Applicant does not teach that the dopant concentration range solves any stated problem or are for any particular purpose. Therefore, the dopant concentration range lacks criticality in the claimed invention and does not produce unexpected or novel results. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to doped the PZT film with La up to 5%, since as Basceri et al. teaches the dopant concentration could be controlled in order to prevent degradation of the dielectric film and doping the PZT film is known to improve fatigue characteristics of the film, and because it has been held that where the

general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller,* 105 USPQ 233, MPEP 2144.05 II A.

Claim 83 is rejected 35 U.S.C. 103(a) as being unpatentable over Gilbert et al. (U.S. Patent No. 6,730,354).

Gilbert disclose the device as claimed and rejected above, but does not disclose the method wherein the Ar comprises at least 20% of the flow of the said inert/oxidizer gas.

The examiner notes that Applicant does not teach that the Ar flow rate of at least 20% solves any stated problem or is for any particular purpose. Therefore, the flow rate lacks criticality in the claimed invention and do not produce unexpected or novel results. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to perform the preheating step with an Ar flow rate at least 20%, since the invention would perform equally well to allow for a gradually heating of the substrate to prevent incidence of thermal shock which may cause the substrate to break and throughput to be minimized (see Gilbert et al., column 6, lines 54-65) and because it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller,* 105 USPQ 233, MPEP 2144.05 II A.

Claims 86 and 92 are rejected 35 U.S.C. 103(a) as being unpatentable over Gilbert et al. (U.S. Patent No. 6,730,354) in view of Sakurai (U.S. Patent No. 6,350,644).

Gilbert et al. disclose the device as claimed and rejected above, but does not disclose the method wherein the PZT film is doped up to 5% with either La or Nb. Sakurai discloses the method wherein the PZT film is doped up to 5% with either La or Nb (see column 4, lines 10-20). It would have been obvious to one of ordinary skill in the art at the time the invention was made to dope the PZT film as Sakurai discloses because doping with La or Nb is known in the art to improve fatigue characteristics and reduce leakage current.

Claims 76, and 95-97 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakurai (U.S. Patent No. 6,350,644) in view of Isobe et al. (U.S. Patent No. 6,114,199)

In re claim 76 , Sakurai discloses the PZT film prepared in accordance with the method comprising forming a bottom electrode over said a substrate (see column 2, line 65 through column 3, line 22 and column 7, lines 40-45); preheating said semiconductor wafer (column 7, lines 40-45), wherein said preheating step comprises placing said semiconductor wafer on a heater, and heating said semiconductor wafer in a vacuum (see column 7, lines 40-45); and forming a PZT film (see column 7, lines 45-52) over said bottom electrode.

Sakurai discloses the device as claimed and rejected above including the method wherein the ferroelectric material is used in a DRAM or FRAM (see column 2, lines 20-23), but does not disclose the method wherein the bottom electrode is formed over a front-end structure. Isobe et al. discloses the device of forming transistors (12, 13) and then forming a bottom electrode (22) over the transistor, and therefore, a bottom electrode is disclosed as being formed over a front-end structure. It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the bottom electrode over a front-end structure as Isobe et al. teaches, in the method of Sakurai, in order to drive current and provide an operable device.

In re claims 95 and 97, Sakurai disclose the device wherein said stoichiometric PZT film is $PbZrO_3$, wherein said stoichiometric PZT film is $PbTiO_3$, wherein said stoichiometric PZT film is a solid solution of the component end members $PbZrO_3$ and $PbTiO_3$.

While Sakurai does not specifically state the PZT film is either $PbZrO_3$ or $PbTiO_3$, the examiner notes that a PZT film must contain some titanium and some zirconium in order to be a PZT film (lead zirconium titanate) therefore, the examiner takes Sakurai disclosure of a $Pb(Zr, Ti)O_3$ (see column 4, lines 4-20) film to read on the limitation of the PZT film being $PbZrO_3$ or $PbTiO_3$.

The examiner notes that Merriam-Webster's Collegiate Dictionary, Tenth Edition defines solution as an act or the process by which a solid, liquid or gaseous substance is homogenously mixed with a liquid or sometimes a gas or solid, or a homogenous

mixture formed by this process. The examiner notes that Pb(Zr, Ti) O_3 is a solid solution of the component end members $PbZrO_3$ and $PbTiO_3$.

In re claim 96, Sakurai disclose in one embodiment the device as claimed and rejected above, but do not disclose the device wherein the PZT film is doped up to 5% with either La or Nb. Sakurai discloses in another general embodiment the device wherein the PZT film is doped up to 5% with either La or Nb (see column 4, lines 10-20). It would have been obvious to one of ordinary skill in the art at the time the invention was made to dope the PZT film as Sakurai discloses because doping with La or Nb is known in the art to improve fatigue characteristics and reduce leakage current.

Claim 94 is rejected 35 U.S.C. 103(a) as being unpatentable over Sakurai (U.S. Patent No. 6,350,644) and Isobe et al. (U.S. Patent No. 6,114,199) in view of Gilbert et al. (U.S. Patent No. 6,730,354).

The combined Sakurai and Isobe et al. disclose the device as claimed and rejected above, but do not disclose the device wherein the PZT film contains at least 2% excess Pb from the stoichiometric composition of $Pb_{1.0}(Zr,Ti)_{1.0}O_3$.

Gilbert et al. discloses the device wherein the PZT film contains at least 2% excess Pb from the stoichiometric composition of $Pb_{1.0}(Zr,Ti)_{1.0}O_3$ (see column 7, line 13 to column 8, line 6 and specifically Figure 5, wherein the preferred gas ratio Pb/ Zr +Ti of 1.00 to 1.07 shows a film containing a Pb/Zr +Ti ratio of approximately 1.1). It would have been obvious to one of ordinary skill in the art at the time the invention was

made to form a PZT layer of Sakurai with excess lead, because as Gilbert et al. teaches the material formed has excellent electrical properties.

Response to Arguments

Applicant's arguments filed May 11, 2005 have been fully considered but they are not persuasive. Applicants argue that Basceri et al. does not teach the formation of a haze free PZT film because Basceri et al. teaches that the PZT is formed with precursors flowing. Initially, the examiner would like to point out that, "haze free PZT film" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951). The examiner notes that the body of the claims do not refer back to the preamble. Although the term "haze free PZT film" has not been given patentable weight, the references relied upon by the examiner, including Basceri, do indeed form a haze free PZT film since they include the method of preheating prior to forming the PZT film which is taught by Applicants to form a haze free PZT film (see page 5, lines 1-15),

Further, Applicants' argument that "Basceri et al.'s PZT film is not haze free because it is formed with precursors flowing" is not persuasive. The examiner notes that precursors must be flowing in order to form a layer by CVD.

Applicants also argue that the gases cited in the Office Action are carrier gasses, and note that Applicants do not flow any precursors during the preheating. The examiner notes that claims 74-76 and 80-97 are product-by-process claims. Product-by-process claims are not limited to the manipulations of the recited steps, only the structure implied by the steps. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Further the examiner notes that the chamber contains air, which contains nitrogen, and inert gases (see column 9, lines 25-45).

Applicants also argue that Gilbert et al. does not teach the formation of a haze free PZT film. The examiner notes, that although the term "haze free PZT film" has not been given patentable weight, the references relied upon by the examiner, including Gilbert et al., do indeed form a haze free PZT film since they include the method of preheating prior to forming the PZT film which is taught by Applicants to form a haze free PZT film (see page 5, lines 1-15),

Further, Applicants argue that Gilbert et al. teaches away form the invention because Gilbert et al. requires that the wafer be suspended by lift pins over "susceptor 24" but not on the heater, as claimed. Again, the examiner notes that claims 74-76 and 80-97 are product-by-process claims. Product-by-process claims are not limited to the manipulations of the recited steps, only the structure implied by the steps. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). Further, the examiner maintains that Gilbert et al. teaches the wafer to be on the heater as claimed since the term "on" does not require direct contact.

Applicants argue examiner's statement "that Applicant does not teach that the Ar flow rate of at least 20% solves any stated problem or is for any particular purpose" and that "the flow rate lacks criticality in the claimed invention and do not produce unexpected or novel results". The Applicants point to pages 5 and 6 to show support for the criticality where Applicants state that "because of the preheat step that was performed in accordance with the invention hereinabove, a haze free, phase pure PZT film is now formed..." (page 5, lines 15-17) and "By performing the preheat step in accordance with the present invention, the stoichiometric PZT film that forms the capacitor dielectric, 3, has desirable endurance, durability, and reliability" on page 6

(lines 16-20). The examiner notes that Applicants' specification on page 5, lines 5-10, also state that while the best mode of the invention is a combination of Ar and 02 (whereby Ar comprises at least 20% of the total gas flow) that "the use of other inert gases such as He, N2, or only Ar, is within the scope of this invention" and that "it is within the scope of this invention not to use any gas during the preheat step, rather the preheat step is performed by a vacuum in the MOCVD chamber". Applicants citation of page 5, lines 15-17, to support criticality, refers back to all of the aforementioned methods, including to an embodiment that does not require any argon at all, and yet still achieves the advantages of a haze free, phase pure PZT film. Therefore, the examiner submits that Applicants teach that concentration of Ar in the flow rate is not critical.

Applicants argue that Sakurai et al. does not teach a haze free PZT film because the process does not include a preheating the wafer. The examiner disagrees and notes that the substrate is heated to 600 degrees C, prior to formation of the PZT film, and thus is preheated.

Applicants argue that the combination of Gilbert et al. with Sakurai would not be logical because Sakurai's method does not include a preheat step. The examiner disagrees, and notes that Sakurai does indeed disclose a preheat step, as explained in the paragraph above. Further, In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Applicants argue that Sakurai does not disclose Nb. The examiner notes that claim recites doping with either La **or** Nb, and therefore only one of either La **or** Nb need to be disclosed to read on the claim at hand. Finally, Applicants argue that Sakurai does not disclose the recited doping of up to 5%. The examiner notes Sakurai disclose in column 4 lines 10-15, the stoichiometry of $(Pb_{1-x}M_x)(Zr_yTi_{1-y})O_3$ wherein the M is La and x is anywhere for 0 to 0.2 and y is anywhere from 0.05 to 0.6 which allows for La to be doped up to 5% as claimed. For example, if x=0.1 and y=0.4 then the stoichiometry becomes: $(Pb_{0.9}M_{0.1})(Zr_{0.4}Ti_{0.6})O_3$ which can be read as: $(Pb_{0.9}M_{0.1})_1(Zr_{0.4}Ti_{0.6})_1O_3$ (the stoichiometry of the metals within the parentheses being a 1:1 ratio, as supported in example 2, column 8, lines 50-55). Thus, with 0.1 mol of La to 5 total mol of elements the La concentration is $\frac{0.1mol}{5mol}\times 100$ percent = 2 percent La. This satisfies the claimed condition of doping up to 5% La or Nb.

Applicants also argue the combination of Isobe et al. with Sakurai, stating the Isobe et al. does not teach forming a haze free PZT film, nor would it be logical to combine the method of forming Bi-based layer ferroelectric with a method of making a PZT. The examiner notes that Isobe was not relied upon to show formation of a PZT film. Sakurai was relied upon to disclose the method of forming a PZT film. Rather, Isobe et al. was relied upon for forming the front-end structure. In response to Applicants arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on

combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Deso et al. (U.S. Patent No. 5,873,977) disclose that doping PZT with La and Nb is known in the art to improve fatigue characteristics and reduces leakage current.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer M. Kennedy whose telephone number is (571) 272-1672. The examiner can normally be reached on Mon.-Fri. 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael S. Lebentritt can be reached on (571) 272-1873. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jennifer M. Kennedy
Primary Examiner
Art Unit 2812

jmk